Musashi signaling in stem cells and cancer.

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Public Summary:
How a single cell gives rise to an entire organism is one of biology's greatest mysteries. Within this process, stem cells play a key role by serving as seed cells capable of both self-renewal to sustain themselves as well as differentiation to generate the full diversity of mature cells and functional tissues. Understanding how this balance between self-renewal and differentiation is achieved is crucial to defining not only the underpinnings of normal development but also how its subversion can lead to cancer. Musashi, a family of RNA binding proteins discovered originally in Drosophila and named after the iconic samurai, Miyamoto Musashi, has emerged as a key signal that confers and protects the stem cell state across organisms. Here we explore the role of this signal in stem cells and how its reactivation can be a critical element in oncogenesis. Relative to long-established developmental signals such as Wnt, Hedgehog, and Notch, our understanding of Musashi remains in its infancy; yet all evidence suggests that Musashi will emerge as an equally powerful paradigm for regulating development and cancer and may be destined to have a great impact on biology and medicine.

Scientific Abstract:
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